

PATENT

Attorney Docket No. A-71327/DJB/VEJ
Attorney Matter No. 461124-00021
Application No. 10/049,705

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Original) A process for producing electricity in a fuel cell which comprises reacting a higher carbon (C_{2+}) hydrocarbon fuel with steam in a steam pre-reformer at a temperature in the pre-reformer of no greater than 500°C to produce a fuel stream including hydrogen and no less than about 20% by volume methane measured on a wet basis, and supplying the fuel stream and an oxidant to a high temperature fuel cell in which the methane is reformed and electricity is produced by reacting the fuel stream at an anode of the fuel cell and reacting the oxidant at a cathode of the fuel cell.
2. (Original) A process according to claim 1 in which the fuel stream includes no less than about 25% by volume methane measured on a wet basis.
3. (Previously presented) A process according to claim 1 in which the fuel stream includes no less than about 40% by volume methane measured on a wet basis.
4. (Previously presented) A process according to claim 1 in which the temperature in the steam pre-reformer is no more than about 450°C .
5. (Previously presented) A process according to claim 1 in which the reaction of the fuel with steam in the methane generator is performed adiabatically.
6. (Previously presented) A process according to claim 1 in which the steam to carbon ratio in the methane generator is no more than 1.5.
7. (Original) A process according to claim 6 in which additional steam is introduced to the fuel stream downstream of the steam pre-reformer.

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8. (Original) A process according to claim 7 in which the additional steam is recycled from an anode exhaust stream.
9. (Previously presented) A process according to claim 1 in which the fuel is a C₃+ hydrocarbon fuel.
10. (Original) A process according to claim 9 in which the fuel is selected from the group consisting of LPG, gasoline (petrol) and diesel.
11. (Previously presented) A process according to claim 1 in which the fuel is selected from the group consisting of ethane, propane, butane, LPG, gasoline (petrol), diesel, kerosene, fuel oil, jet oil, naphtha and mixtures of two or more of these.
12. (Previously presented) A process according to claim 1 in which the reaction at the anode of the fuel cell is performed at a temperature of at least 700°C.
13. (Previously presented) A process according to claim 1 in which waste heat from the fuel cell is recycled to the steam pre-reformer.
14. (Previously presented) A process according to claim 1 in which the reaction in the steam pre-reformer results in the conversion of at least 97.5% of the higher carbon (C₂+) hydrocarbon fuel.
15. (Original) A process according to claim 14 which results in at least substantially complete conversion of the higher carbon (C₂+) hydrocarbon fuel.
16. (Previously presented) A process according to claim 1 in which the fuel stream includes no less than about 50% by volume methane measured on a wet basis.

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17. (Previously presented) A process according to claim 1 in which the fuel stream includes no less than about 60% by volume methane measured on a wet basis.

18. (Previously presented) A process according to claim 1 in which the temperature in the steam pre-reformer is in a range of about 250°C to 450°C.

19. (Previously presented) A process according to claim 1 in which the temperature in the steam pre-reformer is in a range of about 300°C to 400°C.

20. (Previously presented) A process according to claim 6 in which the steam to carbon ratio in the methane generator is no more than 1.25.

21. (Previously presented) A process according to claim 6 in which the steam to carbon ratio in the methane generator is no more than 1.0.